**Making an Acid-Base Indicator**

**This experiment is to be written up using the correct headings – see assessment rubric on wiki**

**Equipment**

Chopped red cabbage

Stirring rod

Water

Two 250ml beakers

0.1M sodium hydroxide

0.1M hydrochloric acid

Dropping pipette

Lemon juice

Vinegar

Milk

Ammonia cleaner

Bunsen burner, heatproof mat, tripod, gauze mat

Test tubes and test tube rack

Safety glasses

**Method**

1. Two thirds fill the beaker with chopped red cabbage
2. Cover the cabbage with water.
3. Boil the cabbage for 5- 10 mins, stirring gently from time to time. Most of the colour should come out of the cabbage.
4. Turn off the flame and allow the mixture to cool for a few minutes.
5. Pour off the liquid into the other beaker.

This purple liquid is an indicator. Test it out by doing the following:

1. Add 10 drops of hydrochloric acid to two test tubes.
2. Add 2 drops of red cabbage indicator to one tube and 2 drops of universal indicator to the other tube.
3. Write down the colour of each tube and write down, ***from the card,*** ***the pH of the tube with universal indicator***. Use the table below for your results.
4. Repeat steps 1, 2 and 3 using clean test tubes for the rest of the substances in the table.

|  |  |  |  |
| --- | --- | --- | --- |
| Substance | Colour with Cabbage Juice | Colour in Universal Indicator | pH |
| Hydrochloric Acid |  |  |  |
| Sodium Hydroxide |  |  |  |
| Lemon Juice |  |  |  |
| Milk |  |  |  |
| Vinegar |  |  |  |
| Ammonia Cleaner |  |  |  |
| Distilled Water |  |  |  |

**Questions.**

1. Referring to the results, could red cabbage juice could be used like universal indicator? Explain.
2. What would a colour chart for red cabbage indicator look like?
3. If someone lived in an area where the tap water was from rain water tank how might this affect the experiment?
4. How could this experiment be improved?